

Version with markings to show changes made

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

### Amendment (D)

Figure 2 in a side view shows the arm 13A of the jack 13 being supported by the spiral spring 31 dependent from the regulating screw 32 carried by the flange 25 the regulating screw regulates the spiral spring to an appropriate tension, a higher tension would cause the jack to rise; the upward movement of the jack along with the spiral spring causing the spiral spring to be shortened effecting the spiral spring inert, disabled, ~~causing~~ permitting the jack to escape from the knuckle 12 easily by a ~~very~~ light piano key 19 effected by absence of the traditional excessive friction between the knuckle 12 and the lifting surface of the jack 13, when the arm 13A of the jack 13 hits the escapement let off button 29.

The regulating screw 32 can have a wire inside a hole along the regulating screw 32 with both ends bent, the lower end carrying the spiral spring 31, the upper end supporting the spiral spring, the screw 32 can have a depression around the end for a coil of the spiral spring 31 to hold on, or as shown in FIG.2 the spiral spring 31 being in the hole along the regulating screw 32.

In the present invention the excessive friction plaguing grand pianos is eliminated by a deformable means; a spiral/convoluted spring means, resilient/elastic means or flexible means such as a string, tape or chain connecting the arm 13A of the jack 13 to the flange 25 or to the repetition lever 20. The deformable means holding the jack under the knuckle being shortened into a relaxed state inert, disabled when the arm 13A hits the escapement letoff button 29, resulting in a light piano key. The deformable means being rectilinear can be formed into a band enveloping the repetition lever and the arm of the jack.

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Figure 3 in a side view shows the arm 13A carrying a regulating button 33 resting on a spring 34 carried by a rail 35, the upward movement of the arm 13A effecting the spring 34 carried by the rail 35 to rise inert, disabled ~~causing~~ permitting the jack to escape from the knuckle without the traditional excessive friction when the arm of said jack hits the escapement let off button.

FIG. 3A in a side view shows a spring means 34 carried by the rail 35 residing in a groove 36 under the arm 13A of the jack 13.

Fig. 4 in a side view shows the first end of the spiral spring 31 being attached to the end of the repetition lever 20 carried by an upstanding portion of the wippen lever 18 the distal end of the wippen lever 18 carrying the jack 13. the ~~other~~ second end of the spiral spring 31 being attached to the arm 13A of the jack 13. A band can be formed from a spiral spring stretched about the end of the repetition lever and the arm 13A.

FIG. 5 in a side view shows spring means 34A carried by wippen lever 18 supporting arm 13A opposing regulating button 29A, arm 13A opposing escapement let off button 29, upon depression of key 19 spring 34A contacts regulating button 29A disengaging spring 34A from arm 13A and at the same time arm 13A contacts escapement let off button 29 effectuating jack 13 to slide away of the knuckle 12 without excessive friction.

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Amendment (D)

BRIEF DESCRIPTION OF THE DRAWINGS

FIG.2 in a side view shows a spiral spring depending from a regulating screw attached to arm of a jack.

FIG.3 in a side view shows a regulating button carried by the arm resting on a spring carried by a rail.

FIG.3A in a side view shows the spring on the rail resting in a groove under the arm.

FIG.4 in a side view shows the spiral spring connecting the arm to a repetition lever.

FIG.5 in a side view shows a spring supporting the arm, the spring opposing a regulating button, the arm opposing an escapement button.

## DETAILED DESCRIPTION OF THE DRAWINGS

FIG.2 shows in a side view a first embodiment of the invention, a support rail 30 carrying a hammer shank flange 25 pivoting the hammer shank 11 carrying the piano hammer 10 adjoining back check 22 on the piano key 19, the flange 25 carrying a regulating drop screw 26 adjoining the end of the repetition lever 20, the flange 25 carrying a regulating screw 32 from which is dependent a convoluted spring 31 being connected to the arm 13A of the jack 13 the first end being in a hole in the screw being bent over the end of the screw, the second end being hooked onto the arm 13A of the jack 13 forcing the jack 13 to press against a spoon 27A by the regulating button 27 carried by the jack 13 and holding the jack 13 in position under the knuckle 12, the jack 13 is pivoted from the end of the wippen lever 18 pivoted from a flange 25A carried by the rail 30A, an upstanding portion 18A of the wippen lever 18 pivoting a repetition lever 20 supported by a repetition spring 14 carried by the upstanding portion 18A, the first end of the repetition lever opposing the regulating drop screw 26, the second end carrying a regulating button 21 pressing on the wippen lever 18. Upon depression of piano key 19 the capstan screw 17 on the piano key 19 lifting the wippen lever with the arm 13A of the jack 13 shortening the convoluted spring 31 into a relaxed disabled state effectuating the jack to escape from the knuckle excessive friction free with a light key 19.

FIG.3 shows in a side view a second embodiment of the invention a hammer shank flange 25 carried by the support rail 30 pivoting the hammer shank 11 carrying the piano hammer 10, the flange 25 carrying an escapement let off button 29 and a regulating drop screw 26, the regulating drop screw adjoining the first end of the repetition lever 20, the second end carrying a regulating button 21 pressing on the wippen lever 18 by a repetition spring carried by the upstanding portion 18A of the wippen lever 18 supporting the repetition lever 20, the wippen lever flange 25A carried by the rail 30A pivoting the wippen lever 18, the end of the wippen lever pivoting the jack 13 a regulating button 27 carried by the jack 13 adjoining the spoon 27A carried by the wippen lever 18, the arm 13A of the jack 13 carrying a regulating button 33, the spring 34 carried by the rail 35 adjoining the regulating button 33, the escapement let off button 29 depe-

dependent from the flange 25 opposing the arm 13A of the jack 13. Upon depression of the piano key 19 the capstan screw 17 on the piano key 19 lifts the wippen lever 18 effectuating the regulating button 33 to disengage from the spring 34, the jack in contact with the knuckle propelling the piano hammer striking the string 23, the jack escaping from the knuckle with ease without the pressure of the spring 34 resulting in a light piano key.

FIG.3A relates to FIG.3 shows the spring 34 carried by the rail 35 supporting the arm 13A of the jack 13 in a groove 36 under the arm 13A of the jack 13.

FIG.4 in a side view shows a third embodiment of the invention the convoluted spring 31 connecting the repetition lever 20 to the arm 13A of the jack 13. When the capstan screw 17 on the piano key 19 lifts the wippen lever 18 the rise of the repetition lever is stopped by the regulating drop screw 26 effectuating the convoluted spring 31 to be shortened into a relaxed disabled state disabling the regulating button 27 carried by the jack 13 to press against the spoon 27A, and enabling the jack to escape from the knuckle easily without excessive friction resulting in a light piano key.

FIG.5 in a side view shows a fourth embodiment of the invention the end of the wippen lever 18 carrying a spring 34A supporting the arm 13A of the jack 13, the spring 34A opposing regulating button 29A and the arm 13A opposing the escapement let off button 29 dependent from the hammer shank flange 25; when the capstan screw 17 on the piano key 19 lifts the wippen lever 18 the spring 34A hits the regulating button 29A disengaging the spring 34A from the arm 13A and at the same time the end of the arm 13A hits the escapement let off button 29 effectuating the jack 13 to escape from the knuckle 12 dependent from the hammer shank 11 easily without excessive friction as the arm 13A of the jack 13 being free from the pressure of the spring 34A resulting in a light piano key.

## Amendment(D)

## REFERENCE NUMERALS

- 10 piano hammer
- 11 hammer shank
- 12 knuckle
- 13 jack
- 13A arm of jack
- 14 repetition spring
- 17 capstan screw
- 18 wippen lever
- 19 piano key
- 20 repetition lever
- 21 regulating button
- 22 hammer back check
- 23 piano string
- 25 flange
- 26 regulating drop screw
- 27 regulating button
- 27A spoon
- 29 escapement let off button
- 29A regulating button
- 30 support rail
- 30A support rail
- 31 spiral/convoluted spring
- 32 regulating screw
- 33 regulating button
- 34 spring
- 34A spring
- 35 rail
- 36 groove